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TUBAL GESTATION.

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IN the seventy-ninth volume of the 'Philosophical Transactions,' Dr. Baillie states, that Dr. William Hunter had a preparation of tubal pregnancy, in which the uterus was found enlarged to double its natural size, and contained a decidua. From this appearance Dr. Hunter inferred that the decidua, or outer surface of the secundines, belongs to the uterus, and not to the ovary, or that part of the conception which is brought from the ovarium.

A case of tubal gestation was published by Dr. John Clarke, in which the embryo, amnion, and chorion, were contained in the Fallopian tube, and in the history of which it is stated, that "the uterus, little, if at all enlarged, was lined with a decidua."¹

¹ 'Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge,' vol. i, 1793.

“Though the foetus be extra-uterine,” observes Dr. Denman, “the uterus becomes considerably enlarged, and performs its proper office, by providing the efflorescent or deciduous membrane for the reception of the ovum.”

“Although it be extremely probable, that the decidua begins to be formed at the time that the ovum passes into the cavity of the uterus,” observes Dr. Baillie, “yet it is not absolutely necessary for the formation of the decidua that the ovum should reach the cavity. Where an ovum grows in the ovarium, or Fallopian tube, the decidua is both formed in the uterus, and the uterus is considerably enlarged, so as to undergo, to a certain degree, changes exactly similar to those which take place in a natural pregnancy.”

“It is curious to observe,” says Professor Burns, “that invariably the uterus enlarges considerably, and, in every instance, decidua is formed.”

The seventh volume of the ‘Medico-Chirurgical Transactions,’ published in 1816, contains a description of an extra-uterine foetus contained in the Fallopian tube, by George Langstaff, Esq. “The uterus was considerably larger than we generally observe that organ to be in the unimpregnated state, even in women who have borne several children. On laying it open, the uterine vessels were observed to be very large, but empty; and there was a great quantity of gelatinous matter in the cavity and neck of the uterus. When this was washed off, the internal surface of the viscus looked very vascular, having been highly injected, but there was not the least appearance of a decidua.

“The spermatie artery on the same side, and those arteries ramifying between the laminae of the peritoneum which form the ligamentum latum, and supplying the Fallopian tube, had been previously injected.

“The lacerations were in the posterior surface of the tubal enlargement, and in the longitudinal direction. The Fallopian contents were next minutely examined; and after carefully washing away the coagulated blood from beneath the peritoneal covering, I discovered,” says Mr. Langstaff,

“a chorion and amnion, with a foetus of about eight weeks floating in the liquor amnii.”

This preparation is now in the museum of the Royal College of Surgeons of England, and in the printed catalogue it is stated that “no decidua was found in the uterus,” and no trace of this membrane can be perceived, coating its inner vascular surface.

In the thirteenth volume of the ‘Medico-Chirurgical Transactions’ published in 1824, there is a case of Fallopian-tube pregnancy, recorded by Dr. Elliotson. “The uterus was four inches and a quarter in length, and three inches at the fundus in breadth. The cervix and os uteri were filled with a colourless and translucent jelly-like matter, which also projected a little way from the latter into the vagina, in the form of a very large drop. In the cavity of the uterus was a beautiful decidua.” This preparation is in the museum of the Royal College of Physicians.

In the paper on “Double Uterus,” and on “The structure and formation of the Membranes of the Human Ovum,” published in 1832, in the seventeenth volume of the ‘Medico-Chirurgical Transactions,’ I observed that “the difficulty of determining the precise period of impregnation must render all observations on the human ovum, before the middle or near the end of the second month, more or less vague and uncertain. After this time the organization of the ovum is so far advanced, that the membranous layers which envelope the embryo, and the form of the embryo itself, can be clearly perceived with the naked eye. The amnion is then a transparent sac, which contains the embryo, and the fluid in which it floats. The chorion, covered with villusities on the external surface, surrounds the amnion, but is separated from it a short distance by the interposition of a gelatinous fluid, which is deposited in a very delicate reticular texture. There is a third membranous layer, viz., the decidua, which completely surrounds the chorion, and connects the ovum with the inner surface of the uterus. This, as is well known, appertains not properly to the ovum itself, but is a production of the lining mem-

brane of the uterus; for, in cases of extra-uterine conception, the chorion and amnion alone envelope the embryo, and a deciduous membrane has been found, lining the cavity of the uterus.

“In the accompanying preparation, however, of Fallopian-tube conception, which I assisted in removing from the body of a lady who died about the eight or ninth week of pregnancy from rupture of the tube and internal hæmorrhage, no organized deciduous membrane lined the inner surface of the uterus, but the whole of it was coated with a thin layer of albumen.”

This case occurred in 1829, and the preparation was placed upon the table of this Society in 1832, but, until 1836, when another example of tubal gestation came under my observation, it does not appear that I made any attempt to determine whether, in these two preparations, the ova in the Fallopian tubes were surrounded by decidua.

In a paper entitled “On the Situation of the Deciduous Membrane in cases of Extra-Uterine Conception,” published in the twelfth volume of the ‘Medical Gazette’ for 1839 and 1840, I gave the following description of the appearances observed in these two preparations, which are now placed upon the table of the Society, with an accurate drawing of the second by West.

CASE 1.—A lady died suddenly in 1829 from internal hæmorrhage produced by rupture of the right Fallopian tube, which contained an ovum. On opening the tube and examining the different parts of the ovum, I found a deciduous membrane everywhere surrounding the chorion and closely adhering to the inner surface of the tube, as the decidua usually does to the lining membrane of the uterus in ordinary gestation. Within the decidua the chorion, placenta, amnion, and embryo were distinctly seen. The uterus was larger than natural, and there was no appearance of decidua lining its internal membrane. The decidua and other parts of the ovum in the right Fallopian tube are all distinctly seen in the preparation of the uterus and its

appendages, which is now in the museum of St. George's Hospital.

CASE 2.—On the 18th July, 1836, Mrs. K—, after suffering for some time with symptoms of inflammation and retroversion of the uterus, was seized with great faintness and soon expired. A large quantity of fluid blood was found in the abdominal cavity, and the right Fallopian tube which contained an ovum of ten or twelve weeks, was extensively lacerated near the fimbriated extremity. On removing the uterus and its appendages from the body and carefully examining the ovum contained in the right Fallopian tube, it was evident that a deciduous membrane everywhere surrounded the chorion and adhered to the inner surface of the tube. The placenta, which was situated at the extremity of the ovum nearest the uterus, was seen covered with the decidua, and coagula of the fibrine of the blood were traced from the interstices of the placenta through the decidua into veins in the thickened muscular coat of the tube. At the part where the placenta was situated, the muscular coat of the tube was a quarter of an inch in thickness and could readily be separated into layers like the muscular coat of the gravid uterus. In this coat of the tube the veins were also readily traced from the inner surface outward, opening obliquely into one another and enlarging as they reached a great vein near the uterus.

The interstices of the villousities of the chorion, filled partially with clots of blood, were seen around the whole ovum, and presented nothing different in their appearance from those of ova which have been developed within the uterus.

Between the chorion and amnion, near the placenta, was the vesicula umbilicalis, with its slender peduncle proceeding to the umbilical cord.

The appearance of the amnion, cord and embryo was perfectly natural.

The uterus was considerably enlarged and its inner sur-

face was coated with a very thick layer of a yellowish-white soft substance. There was no trace of any arterial or venous canal in this coating; the orifice and neck of the uterus were closed with the usual viscid substance formed by the Nabothian glands. There was a corpus luteum in each ovary. Both layers of the Graafian vesicle were enclosed within the yellow matter, and this was in immediate contact with the stroma of the ovary.

In the preparation of the parts, the decidua placenta, chorion, vesicula umbilicalis, amnion, umbilical cord, and embryo are all distinctly seen, and likewise the layer of the muscular coat of the Fallopian tube, with the veins proceeding from its internal to its external surface. The vesicula umbilicalis has become greatly diminished in size since the parts were immersed in spirit. With the exception of the coagula of blood in the interstices of the placenta and villi of the chorion, the constituent parts of the ovum are the same as in all cases of intra-uterine gestation and are in a healthy condition. The preparation of the parts is likewise in the museum of St. George's Hospital.

In the history of a case of Fallopian-tube gestation which occurred to M. Chaussier in 1814, it is stated that the walls of the tube were thin and vascular, that the placenta attached to the inner surface was broad and thin, and that when detached the membrana decidua surrounded the ovum. I have met with no case except this in which the deciduous membrane is distinctly described as surrounding the ovum in the Fallopian tube. Yet I am certain that this must be the fact in all cases of extra-uterine gestation, the circulation of the maternal blood being carried on chiefly by the blood-vessels of the deciduous membrane.

All the minute dissections since made confirm the correctness of this view of the structure of the ovum in cases of tubal gestation.

CASE 3.—A woman, aged 35, who had been married thirteen years and had never been pregnant, ceased to

menstruate in July, 1840, and soon after began to have all the symptoms of pregnancy. In November the abdomen, which had previously enlarged, diminished somewhat in size, and, at the end of March, 1841, she had violent pains like those of labour, with a thin red-coloured discharge from the vagina. On the 24th April, 1841, the areolæ were broad and dark, and milk could readily be pressed out of both nipples; but the glands were not enlarged. A hard irregular tumour occupied the hypogastrium; but on the left side it was soft, and an obscure fluctuation was felt in this portion of it. The umbilicus was very little protruded, and there were no white lines on the sides of the abdomen. No movements of a fœtus were felt, nor any sound heard. The cavity of the pelvis was occupied by a hard immoveable mass, and the os uteri was forced up by this behind the symphysis pubis so high that it could scarcely be touched. She died in December, 1841; and, on opening the abdomen, a large mass like the gravid uterus in the seventh month was found occupying the whole of the hypogastrium. The intestines and omentum firmly adhered to the upper part of the tumour, which felt hard in some parts and fluctuated in others. On opening this cyst a great quantity of thin fluid like pus escaped, and a perfect fœtus of six months, with its umbilical cord and placenta. The cyst adhered to the whole of the posterior and upper surface of the uterus, which was larger than natural, and the cervix was considerably lengthened. The walls of the uterus were healthy, and the cavity empty. There was no decidua or substance of any kind coating its inner surface; the placental decidua covered in the usual manner the whole of the uterine surface of the placenta.

CASE 4.—In 1841 I saw another case of tubal gestation, which had proved fatal at an early period of pregnancy. The preparation of the parts is now placed upon the table of the Society. The uterus is seen enlarged, and the inner surface coated with a substance of considerable thickness, of a yellowish-white colour, in which no arteries nor veins

could be traced. The ovum has been almost or completely removed from the tube which it had occupied; but the decidua reflexa is seen very distinctly covering a considerable portion of the villi of the chorion. That the decidua surrounded the entire ovum in this case it is impossible to doubt.

CASE 5.—On the 26th May, 1850, Dr. Blakeley Brown presented to me a Fallopian tube which had contained an ovum of two months. The following is the history of the case furnished to me by Dr. Blakeley Brown:

“May 24th.—Mrs. B—, æt. 26. Saw her with Mr. C—, who has been attending her, and considered her to be labouring under morbus uteri. She has taken Hydr. Chlorid. gr. $\frac{1}{2}$, Opii $\frac{1}{3}$. She was lying on her back in bed with her eyes shut, and suffering from “spasms.” Complains of intense pain over the abdomen, which is not constant. Pulse 80; soft. Tongue clean. Skin cool. Bowels rather confined. Catamenia absent between two and three months. Os and cervix uteri soft, puffy, large, and healthy. Has had morning sickness; breasts have got rather larger and painful. I prescribed Haust. Cascarillæ c. Sod. Bicarb. and Tinct. Card. co., thinking it a case of sickness from pregnancy.

“May 25th.—9 a.m. Has passed a restless night. Is sick and faint; vomited the mixture, and has taken two pills on her own account. I gave her some brandy and Seltzer water immediately, and prescribed a draught with Æther. Sulph. co.—1 p.m. Much the same; is very faint.—4 p.m. Saw her with Dr. Nairne, who prescribed Hs. Sp. Ammon. Acet. c. Liq. Opii Sed.—8 p.m. I found she had been dead about an hour, having kept the draught and some port wine without vomiting.

“May 26th.—Post-mortem examination made by Mr. Tatum; Dr. Nairne and myself present.—Body much blanched, otherwise healthy. On opening the abdomen a large quantity of blood came out, and there was in the pelvic cavity upwards of three quarts. The hæmorrhage came

from the right Fallopian tube, which had burst from the ovum being lodged there. There was a fair corpus luteum. The uterus was healthy, with decidua, and had all the appearance of a healthy gravid uterus of two months, as certified by Dr. Lee."

I have not succeeded in finding any account in my journal of the state of the uterus in this case ; and, if my recollection does not fail me, the Fallopian tube had been separated from the uterus before it was kindly presented to me by Dr. Blakeley Brown. The preparation is now placed upon the table of the Society. The embryo and amnion have escaped ; but the chorion and decidua remain in the tube, adhering to its surface.

CASE 6.—Mr. Jackson, of Wimpole Street, presented to me, in 1856, the uterus and appendages of a woman who had died suddenly from internal hæmorrhage at an early period of pregnancy. The preparation of the parts is now placed upon the table of the Society. It will be seen that the uterus is enlarged, and the whole lining membrane coated with a thick irregular layer of a substance, resembling the fibrine of the blood, of a red colour, in the upper part. This substance has been partially detached from the lining membrane of the uterus, which presents a natural appearance. When the preparation came into my possession the right Fallopian tube about the middle was as large as a walnut, or larger where its coats had burst and a coagulum of blood was hanging through the irregular aperture. The tube was pervious from the corpus fimbriatum to the dilated part. On cutting open this expanded portion, a small embryo enclosed in the amnion was observed, and the vesicula umbilicata, remarkably large, with its peduncle, came into view. All the cells of the placenta and villi of the chorion were seen distended with coagulated blood and surrounded with a deciduous membrane, a great part of which has been separated from the inner surface of the tube. By a careful dissection subsequently made, the decidua was found to consist of placental decidua, decidua vera, and

reflexa, with a decidual cavity. The ovum in this case of tubal gestation was, therefore, perfect in all its structures, and similar in every respect to ova which had reached the cavity of the uterus and been developed there until the end of the second month.

On the 30th October, 1857, I was informed by a gentleman who professes to be well acquainted with the Dutch language, of which I am wholly ignorant, that Professor Schröder Van der Kolk had published an account of a case of tubal gestation in which a decidua surrounded the ovum, and which was described as fulfilling the function of a placenta. Professor Schröder Van der Kolk, I am informed, has represented in fig. 47 a portion of a very soft spongy mucous membrane of the uterus with blood-vessels, in a Fallopian-tube gestation.

“The figure is magnified fifty times. It represents a small portion of the mucous membrane itself of the uterus, as seen under the microscope. The hollows in the part of the figure are openings of utricular glands. In the lower part the same are laid open by the section at the part where the fragment was cut from the uterus. The uterus had been injected. The pink are the arteries and the blue the veins ramifying through the part.”¹

There are five preparations of Fallopian-tube conception in the museum of St. Bartholomew's Hospital. The following is a description of them from the museum catalogue :

“Series XXXIII, Nos. 13—18.

“No. 13. An uterus with the ovaries and the Fallopian tubes. The middle of the left Fallopian tube was dilated by an ovum. The dilatation is laid open and the chorion and other parts of the ovum are shown. The uterus is slightly enlarged, and its cavity is lined by a substance like

¹ “*Waarnemingen over het Maaksel van de Menschelijke Placenta,*” &c. ‘*Verhand. der Eerste Klasse van het Koninklijk-Nederlandsche Instituut,*’ Vierde Deel, 4to, pp. 156-164, tab. vi, figs. 47 and 49.

decidua. There is a simple cyst in the right ovary. Rupture of the dilated portion of the Fallopian tube took place in the seventh week of gestation, and the patient died of hæmorrhage.

“No. 14. A similar specimen, in which, as in the preceding case, death was the result of hæmorrhage from the ruptured Fallopian tube in the seventh week of gestation. The middle of the right Fallopian tube is dilated into a sac, which contains the foetus and its membranes. In one side of this sac is a small lacerated opening, through which the flocculent chorion protrudes. From this opening a gallon of blood was discharged into the cavity of the abdomen. On its other side a large portion of the sac has been removed to display the foetus and membranes. The outermost membrane enclosing the foetus has all the characters of decidua. Besides this membrane, the amnion and chorion are distinct. The foetus and umbilical cord are also perfect. The right ovary contains a large corpus luteum, distinguishable by its circular form and yellowish colour. A bristle is passed through the aperture of the ovary, through which the ovum escaped. There is also a large cyst in the ovary, which contained a watery fluid. The cavity of the uterus is lined throughout by a perfect and thick decidua. Bristles are passed through it into the uterus. A bristle is also passed through the Fallopian tube into the dilated portion of it, which contains the foetus and its membranes.

“No. 15. A portion of the broad ligament of a uterus, with the Fallopian tube and ovary. In the middle of its course the Fallopian tube is distended by the development of an embryo within it. On the surface of this part there is a small irregular aperture, through which fatal hæmorrhage into the abdomen took place. The ovary is large; at its lower part is a very large corpus luteum, with a central cavity.

“The patient, in the seventh week of the tenth pregnancy, was suddenly seized with pain in the situation of the

Fallopian tube and signs of internal hæmorrhage, and died in ten hours.

“No. 16. A uterus with the Fallopian tubes and ovaries. A foetus has been developed in the right Fallopian tube close to the uterus, till it has attained a length of between three and four inches. The placenta and the several membranes of the ovum appear to be well formed. The uterus is covered by coagulated blood, effused probably from the ruptured Fallopian tube.

“No. 17. A similar specimen, in which the foetus contained in the left Fallopian tube is yet further developed, and measures between five and six inches in length. Both it and its membranes are well formed.

“No. 18. A similar specimen, in which death occurred in the third month of gestation. The middle of the left Fallopian tube, which contained the foetus, is dilated into a large sac. On one side of this sac is a lacerated opening, through which the foetus escaped into the cavity of the abdomen, and to the edges of which the membranes of the foetus remain attached. The left ovary contains a corpus luteum ; the cavity of the uterus is lined by decidua.”

In the description of Preparation No. 14, it is stated that “the outermost membrane enclosing the foetus has all the characters of decidua. Besides this membrane the amnion and chorion are distinct. The foetus and umbilical cord are also perfect.” I have carefully examined this preparation, and there can be no doubt that a decidua surrounds the ovum in the tube. Though none of the other preparations have been dissected with the view of discovering a decidua surrounding the ovum in the tube, yet in all, the separation of the ovum from the inner surface of the tube has been carried to an extent sufficient to enable us to demonstrate the fact.

The following is a description of the preparations of extra-uterine gestation, from the museum catalogue of

Guy's Hospital. For this and for permission to examine the preparations, I am indebted to Dr. Oldham, Dr. Wilks, and John Bowes, Esq.

2516. Fœtus of about three months old, with part of the membranes, cord, and placenta developed in the extra-uterine sac, seen in the next specimen.

2517. The uterus and parts concerned in forming the cavity from which the preceding specimen was taken. The remains of the sac in which the fœtus was developed are to be seen a little to the right of the fundus of the uterus, which is very small and contains no decidua.

2517²⁰. Extra-uterine fœtation. The ovum has been arrested in the left Fallopian tube, which is expanded into a tumour the size of a billiard ball. The surface is smooth, with the exception of two small rents, neither larger than sixpence; the edges of the opening are very thin. On the opposite side the sac has been opened, and the walls are seen to be thin. The outer membrane of the ovum was covered with blood, and the villi were with some trouble separated from it. Nothing like a deciduous membrane was found between the chorion and the lining membrane of the tube. A delicate amnion contains the fœtus; the latter is nearly an inch long. Umbilical vesicle not discovered. In the opposite ovary the corpus luteum is seen. The uterus is twice the size of a virgin one. The walls are thickened and lined by a slightly raised efflorescent membrane, which had several superficial alveolar depressions on the interior surface. On examination with a lens, no true deciduous membrane could be detected; it appeared to be more like the half organized membrane of dysmenorrhœa.

2517²⁵. Extra-uterine pregnancy of about the third month. The fœtus was developed in the right Fallopian tube. The ovum is contained in its membrane, surrounded by chorion, and external to this is coagulable lymph or a coagulum of blood. The uterus is enlarged and occupied by a slight flocculent exudation.

2517³⁰. Extra-uterine foetation. The right Fallopian tube is expanded at its distal extremity into a sac the size of an orange. The seat of rupture is at the lower part, from which originally protruded a large coagulum. On opening it the ovum was found within, and containing a foetus of between three and four months' development, enveloped by membranes, and around these the tufts of chorion. Between the walls of the tube and the placenta was a coherent membrane, which seemed to act as a medium of connexion between the two; its structure could not be made out. The right ovary was found to contain a corpus luteum. The uterus was as large as an orange, or at a four months' pregnancy. A plug of mucus filled the os. The mucous membrane was raised into a very rich deciduous membrane and thrown into folds, and was tubular, the openings of which presented a cribriform appearance. The openings of the Fallopian tube were closed.

2517⁵⁰. Uterus with left Fallopian tube natural. The right communicates with a vicarious uterine cavity, containing a full-grown foetus. The sac appears to have been originally formed in the Fallopian tube of the right side. The walls are thick and lined with a flocculent membrane.

2517⁶⁰. Extra-uterine pregnancy, about the fourth month. This preparation has been injected. The sac is found in the right Fallopian tube, the amnion is seen within, and the umbilical cord attached to the placenta, and immediately within the tube itself is a thick material, like coagulated blood. The uterus is enlarged, and its mucous surface is covered with shreds of membrane which are cribriform and porous like the decidua.

2517⁶¹. Extra-uterine foetation, between two and three months, in left Fallopian tube. The sac is partially open, showing the chorion; but the ovum is still in the sac of the amnion. The uterus is enlarged, and is filled with a thick exudation resembling decidua, and this is slightly cribriform. The corpus luteum is in the right ovary.

2517⁶². Extra-uterine foetation of about the sixth week, developed in right Fallopian tube. The corpus luteum is in the left ovary. The uterus is enlarged and contains some coherent shreds of exudation.

2517⁶⁵. Interstitial extra-uterine foetation. The ovum was imbedded in the left horn of the uterus, as seen in the upper part of the divided organ. The cavity is about the size of a horse-chesnut, and is quite closed. The uterus is much increased in size, and its cavity is filled with an exuberant growth of deciduous membrane closing the Fallopian tube. This membrane is perforated throughout by small openings, varies in thickness, and is not easily separable from the uterus, and does not present those cup-like sacs which mark the decidua vera thrown off with an aborted ovum. Its prevailing character is tubular. The right ovary contains the corpus luteum, which is large. The ovum was lost in the abdomen.

2517⁷⁰. Extra-uterine foetation, seventh or eighth week of pregnancy. Development has taken place in the left Fallopian tube. The foetus is contained in a delicate amnion, surrounded by its chorion. The uterus is enlarged, and its surface is covered with a cribriform deciduous membrane.

2517⁷⁵. Extra-uterine foetation, at about the sixth month. A large sac exists at the extremity of the left Fallopian tube, being formed in part by the tube and in part by the ovary. The greater part of the tube can be traced entire, leading to the belief that the sac is formed partly in the ovary. It contains placenta, membranes, and foetus. The uterus is much enlarged, and covered with soft masses of lymph-like exudation, resembling deciduous membrane. The corpus luteum is in the left ovary.

2517⁸⁰. Extra-uterine foetation, about the sixth or seventh week, developed in the extremity of the left Fallopian tube, whose end is adherent to the ovary. The ovum, which had escaped, is enclosed in the chorion, and the latter has on its

outer surface a flocculent exudation. The uterus is enlarged and a cribriform deciduous membrane is seen on its interior. The corpus luteum is in the ovary on the same side.

It is stated in the description of this preparation that "the ovum which had escaped is enclosed in the chorion, and the latter has on its outer surface a flocculent exudation." I was permitted by Dr. Wilks, conservator of the museum, to make a minute examination of this ovum, which had escaped entire through the rent in the Fallopian tube, and I had the great satisfaction, not only to discover the vesicula umbilicalis, but to see the chorion completely surrounded by a decidua, as in the preparation of tubal gestation described in this communication. If the other preparations in the museum of Guy's Hospital were subjected to a minute anatomical investigation, there can be no doubt that in all a decidua would be found surrounding the ovum in the Fallopian tube.

Respecting the nature of the membrane or substance found coating the inner surface of the uterus in the greater number of these preparations, and which has been almost universally considered to be decidua since the time of Dr. William Hunter, although no blood-vessels in it have been discovered, I shall at present refrain from expressing any positive opinion, the great object of this communication being to demonstrate the existence of a decidua around the ovum in cases of tubal gestation.